DOCUMENT RESUME

ED 163 564 EA 011 001

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TITLE A Technical Analysis of the Influence of Community Schools in Eugene on School District Budget Elections.
INSTITUTION Eugene School District 4J, Oreg. Div. of Research, Development, and Evaluation.
PUB DATE 15 Jun 78
NOTE 8p.

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Community Schools; Elementary Secondary Education; *School Budget Elections; Statistical Data; Voting
IDENTIFIERS Eugene Public Schools OR

ABSTRACT

A brief examination of the voting patterns in seven budget elections from 1974 to 1978 in Eugene (Oregon) School District 4J reveals that there are no significant differences between the percentage of people voting Yes in precincts with community schools and the percentage of people voting Yes in other precincts. The turnout rate in precincts with community schools is a statistically significant 4 percent higher, however. The percentage of Yes votes by precinct is primarily related to the precinct's geographical location, as is turnout. A short appendix describes the methodology of the study. (Author/PGD)

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ED163564

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A Technical Analysis of the Influence of Community Schools in Eugene on School District Budget Elections

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June 15, 1978

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The Eugene School District board has asked the school district's Research, Development and Evaluation division (RD&E) to evaluate the community school program. This brief technical report is being issued as part of the preliminary background research for this evaluation.

The purpose of this report is to answer the following question. Is the presence of a community school in an area accompanied by higher voting support for school district budgets? This report considers the last seven District 4J budget elections from 1974 through 1978, and analyzes patterns in the percent of YES votes and voter turnout. The report concludes:

1. There are no significant differences in percent of people voting YES in precincts with community schools and in precincts without community schools. However, the turnout rate of registered voters for precincts with community schools is about 4% higher than the turnout rate for precincts without community schools. The 4% difference is statistically significant.

2. Generally speaking, precincts show the same voting patterns across the seven elections. This means that precincts with high YES votes or high turnout for one election tend to have high YES votes or high turnout for the other six elections examined.

3. Precincts are tending to become more alike in their voters' willingness to vote YES or NO. The variation in turnout among precincts shows no trend

4. There are no apparent trends either upward or downward in the public's willingness to support school district budget elections. Neither turnout nor YES votes show any upward or downward trend.

5. The enclosed map shows that the percent of YES votes by precinct is primarily related to the location of the precinct in the district.

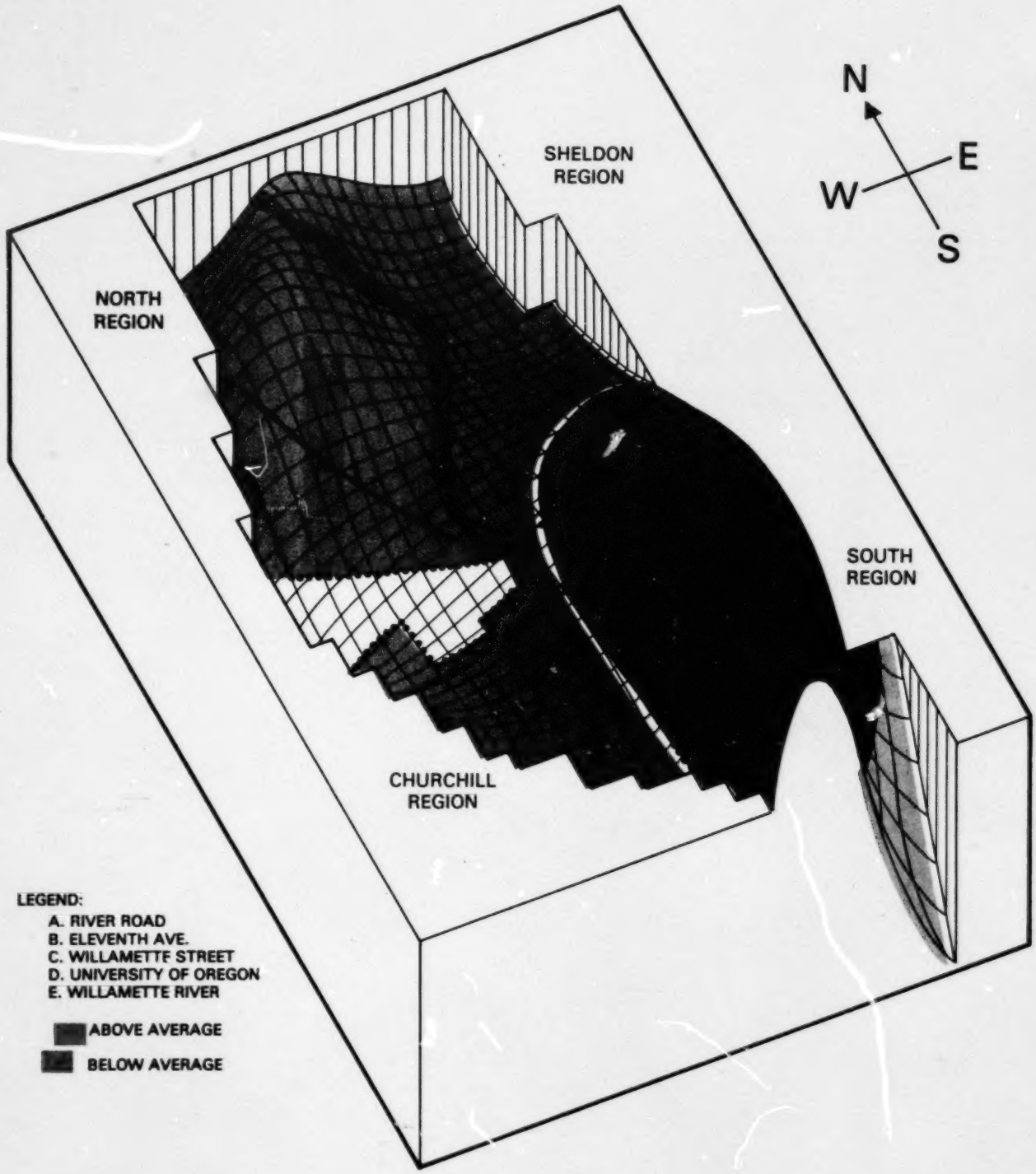
The turnout rate was also found to be related to the district's geography. The turnout was the lowest just north of the University of Oregon, A three-dimensional representation of turnout patterns is not presented in this report. However, the representation was calculated and resembles an irregular bowl. The bottom of the bowl is in the university area and turnout gradually rises as the distance from the university increases.

The voting diagram presented below, is a pictorial representation of the functional relationship between YES voting and the geography of Eugene.

The dark dotted lines represent the regional boundaries for the four regions comprising the Eugene school district. The district is responsible for providing education to a one hundred fifty-seven square mile area. Each square mile on the diagram represents an area one-quarter square mile and the height of the surface can be viewed as a probability that a voter living at that location voted YES in previous school budget elections. The Bailey precinct in the southwest Churchill area has been systematically truncated because its wide geographical area made calculating probabilities difficult. The platform represents the district average YES vote, which is approximately 46%. The average precinct probabilities range from 95% to 5%.

The three-dimensional blue-colored area, containing the southern end of the Sheldon region and almost all of the South region, has higher than average YES voting for school district budgets. The green-colored areas in the Churchill, Sheldon and North regions, have lower than average YES voting.

The rest of this report is a Technical Appendix. It states how the conclusions cited above were arrived at. Readers are advised that this is a technical appendix and is not intended for the general or average reader.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REGION
CHURCHILL
REGION
LEGEND:
A. RIVER ROAD
B. ELEVENTH AVE.
C. WILLAMETTF STREET
D. UNIVERSITY OF OREGON
E. WILLAMETTE RIVER
ABOVE AVERAGE
BELOW AVERAGE

Technical Appendix

An analysis of the last seven school budget election results was conducted to determine the following:

1. Do precincts which either have a community school or are contiguous to a precinct with a community school, have voting patterns that differ from precincts which do not have a community school?

2. What is the relationship of voting behavior to the geography of Eugene?

3. Are there possible voting trends across the seven elections?

Community Schools

Additionally, it was found that while precincts serviced by community schools vote slightly more favorably towards school levies, by 4.7%, the overall difference between the two groups was not statistically significant. However, the turnout among registered voters was significantly different for the two groups.

The average turnout rate for the seven elections examined was 4.1% higher for precincts with community schools. The 4.7% difference for YES votes among the two groups of precincts is greater than the 4.1% difference in turnout. However, the variance among precincts is less for the turnout data. Because the variance among precincts in their turnout is lower than the variance in their YES voting, the 4.1% difference is statistically significant and the 4.7% difference is not.

Equality of the covariance matrices for YES vote and turnout was also accepted leading to the conclusion that the difference in the voting behavior for precincts serviced by community schools could be due to chance.[1]

"YES" Votes and Location

In order to relate the voting preference to the geography of Eugene, it was first necessary to determine what to use as a measure of voting preference.

The first principal component from the correlation matrix of YES votes was found to account for 87% of the total information contained in the matrix of YES votes. The first principal component can be interpreted as an average of the percentage of YES votes by precinct across the seven elections.[2] The fact that most of the variation in the data can be accounted for by one principal component suggests that the voting patterns among precincts differ little from one election to another.

Ninety-one percent of the variation in the first principal component could be accounted for by the location of the precincts within the Eugene area.[3]

Past Changes

The data show that the variation in voting preference between precincts is on a decline. The standard deviation of YES votes, which was .1171 in the June election of 1977, was declining by .0121 standard deviations each year.

If this trend continues in future elections, the surface representing the voting preference would be expected to flatten. However, the overall level would remain the same, as there is no linear trend in the district average. The variation in the turnout rate shows no increase or decrease over the seven elections examined.

There is no relationship between turnout and YES votes for the district as a whole. However, the interaction effects of YES votes by turnout by type of precinct were not explored.

Footnotes

[1] The union-intersection principle of S.N. Roy was used to test the hypothesis of equal mean vectors for the two groups. F-values for the YES votes and turnout were .817 and 4.58 respectively.

An F-distribution approximation proposed by Box was used to test the hypothesis of equal covariance matrices for both the YES vote and the turnout matrix.

[2] Seven eigenvalues were extracted from the pooled correlation matrix of YES votes. The first had a value of 6.05 while the second was only .32. The first eigenvector was .36, .38, .38, .36, .39, .38, .39.

[3] The function relating the geography of the Eugene area to the first principal component was of the form: $f(x, y) = (x + 4)^a (y + 6)^b C^{xAy}$.